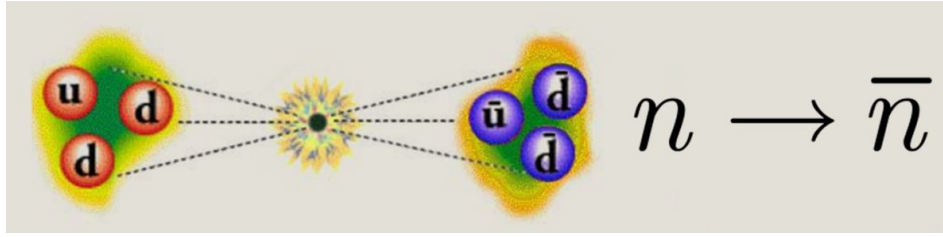


Theoretical Innovations for Future Experiments Regarding Baryon Number Violation, Part 1



Contribution ID: 35

Type: **Oral Presentation**

Neutron-antineutron oscillation search at Super-Kamiokande

Monday, August 3, 2020 12:30 PM (30 minutes)

As a baryon number violating process with $\Delta B = \Delta(B-L) = 2$, neutron-antineutron oscillation ($n \rightarrow \bar{n}$) provides an important candidate and a unique probe to the baryon asymmetry. We performed a search for $n \rightarrow \bar{n}$ oscillation with the Super-Kamiokande (SK) experiment. Full exposure data set of SK was analyzed using a multi-variate analysis based on kinematic variables and basic distributions from simulated $n \rightarrow \bar{n}$ signal events and atmospheric neutrino backgrounds. We observed 11 events, compared with the expected number of background events 9.3. The upper limit of nuclear lifetime is calculated as 3.6×10^{32} years at 90% CL, significantly improved from the present best-limit 1.9×10^{32} years of SK-I.

Contribution Title

Neutron-antineutron oscillation search at Super-Kamiokande

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